

SEQUENCE LISTING

(1) GENERAL INFORMATION:

(i) APPLICANT: Celeste, Anthony J.
Wozney, John
Rosen, Vicki A.
Wolfman, Neil
Thomsen, Gerald H.
Melton, Douglas A.

(ii) TITLE OF INVENTION: TENDON-INDUCING COMPOSITIONS

(iii) NUMBER OF SEQUENCES: 35

(iv) CORRESPONDENCE ADDRESS:

(A) ADDRESSEE: GENETICS INSTITUTE, INC.
(B) STREET: 87 CambridgePark Drive
(C) CITY: Cambridge
(D) STATE: Massachusetts
(E) COUNTRY: USA
(F) ZIP: 02140

(v) COMPUTER READABLE FORM:

(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0, Version #1.25

(vi) CURRENT APPLICATION DATA:

(A) APPLICATION NUMBER: US
(B) FILING DATE: Herewith
(C) CLASSIFICATION:

(viii) ATTORNEY/AGENT INFORMATION:

(A) NAME: Lazar, Steven R.
(B) REGISTRATION NUMBER: 32,618
(C) REFERENCE/DOCKET NUMBER: 5202-D

(ix) TELECOMMUNICATION INFORMATION:

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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 926 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vi) ORIGINAL SOURCE:

(A) ORGANISM: Homo sapiens

(vii) IMMEDIATE SOURCE:

(B) CLONE: v1-1

(ix) FEATURE:

(A) NAME/KEY: mat_peptide
(B) LOCATION: 571..882

(ix) FEATURE:

(A) NAME/KEY: CDS

(B) LOCATION: 1..882

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

GCG CGT AAT ACG ACT CAC TAT AGG GCG AAT TGG GTA CGG GGC CCA GGC	48
Ala Arg Asn Thr Thr His Tyr Arg Ala Asn Trp Val Arg Gly Pro Gly	
-190 -185 -180 -175	
AGC TGG ACT TCT CCG CCG TTG CTG CTG CTG TCC ACG TGC CCG GGC GCC	96
Ser Trp Thr Ser Pro Pro Leu Leu Leu Leu Ser Thr Cys Pro Gly Ala	
-170 -165 -160	
GCC CGA GCG CCA CGC CTG CTG TAC TCG CGG GCA GCT GAG CCC CTA GTC	144
Ala Arg Ala Pro Arg Leu Leu Tyr Ser Arg Ala Ala Glu Pro Leu Val	
-155 -150 -145	
GGT CAG CGC TGG GAG GCG TTC GAC GTG GCG GAC GCC ATG AGG CGC CAC	192
Gly Gln Arg Trp Glu Ala Phe Asp Val Ala Asp Ala Met Arg Arg His	
-140 -135 -130	
CGT CGT GAA CCG CGC CCC CCC CGC GCG TTC TGC CTC TTG CTG CGC GCA	240
Arg Arg Glu Pro Arg Pro Pro Arg Ala Phe Cys Leu Leu Leu Arg Ala	
-125 -120 -115	
GTG GCA GGC CCG GTG CCG AGC CCG TTG GCA CTG CGG CGA CTG GGC TTC	288
Val Ala Gly Pro Val Pro Ser Pro Leu Ala Leu Arg Arg Leu Gly Phe	
-110 -105 -100 -95	
GGC TGG CCG GGC GGA GGG GGC TCT GCG GCA GAG GAG CGC GCG GTG CTA	336
Gly Trp Pro Gly Gly Gly Gly Ser Ala Ala Glu Glu Arg Ala Val Leu	
-90 -85 -80	
GTC GTC TCC TCC CGC ACG CAG AGG AAA GAG AGC TTA TTC CGG GAG ATC	384
Val Val Ser Ser Arg Thr Gln Arg Lys Glu Ser Leu Phe Arg Glu Ile	
-75 -70 -65	
CGC GCC CAG GCC CGC GCG CTC GGG GCC GCT CTG GCC TCA GAG CCG CTG	432
Arg Ala Gln Ala Arg Ala Leu Gly Ala Ala Leu Ala Ser Glu Pro Leu	
-60 -55 -50	
CCC GAC CCA GGA ACC GGC ACC GCG TCG CCA AGG GCA GTC ATT GGC GGC	480
Pro Asp Pro Gly Thr Gly Thr Ala Ser Pro Arg Ala Val Ile Gly Gly	
-45 -40 -35	
CGC AGA CGG AGG AGG ACG GCG TTG GCC GGG ACG CGG ACA GCG CAG GGC	528
Arg Arg Arg Arg Arg Thr Ala Leu Ala Gly Thr Arg Thr Ala Gln Gly	
-30 -25 -20 -15	
AGC GGC GGG GGC GCG GGC CGG GGC CAC GGG CGC AGG GGC CGG AGC CGC	576
Ser Gly Gly Gly Ala Gly Arg Gly His Gly Arg Arg Gly Arg Ser Arg	
-10 -5 1	
TGC AGC CGC AAG CCG TTG CAC GTG GAC TTC AAG GAG CTC GGC TGG GAC	624
Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys Glu Leu Gly Trp Asp	
5 10 15	
GAC TGG ATC ATC GCG CCG CTG GAC TAC GAG GCG TAC CAC TGC GAG GGC	672
Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly	
20 25 30	
CTT TGC GAC TTC CCT TTG CGT TCG CAC CTC GAG CCC ACC AAC CAT GCC	720
Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala	
35 40 45 50	

ATC ATT CAG ACG CTG CTC AAC TCC ATG GCA CCA GAC GCG GCG CCG GCC	768
Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala	
55 60 65	
TCC TGC TGT GTG CCA GCG CGC CTC AGC CCC ATC AGC ATC CTC TAC ATC	816
Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile	
70 75 80	
GAC GCC GCC AAC AAC GTT GTC TAC AAG CAA TAC GAG GAC ATG GTG GTG	864
Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val	
85 90 95	
GAG GCC TGC GGC TGC AGG TAGCGCGCGG GCCGGGGAGG GGGCAGCCAC	912
Glu Ala Cys Gly Cys Arg	
100	
GCGGCCGAGG ATCC	926

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 294 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Ala Arg Asn Thr Thr His Tyr Arg Ala Asn Trp Val Arg Gly Pro Gly	-190	-185	-180	-175
Ser Trp Thr Ser Pro Pro Leu Leu Leu Ser Thr Cys Pro Gly Ala	-170	-165	-160	
Ala Arg Ala Pro Arg Leu Leu Tyr Ser Arg Ala Ala Glu Pro Leu Val	-155	-150	-145	
Gly Gln Arg Trp Glu Ala Phe Asp Val Ala Asp Ala Met Arg Arg His	-140	-135	-130	
Arg Arg Glu Pro Arg Pro Pro Arg Ala Phe Cys Leu Leu Leu Arg Ala	-125	-120	-115	
Val Ala Gly Pro Val Pro Ser Pro Leu Ala Leu Arg Arg Leu Gly Phe	-110	-105	-100	-95
Gly Trp Pro Gly Gly Gly Gly Ser Ala Ala Glu Glu Arg Ala Val Leu	-90	-85	-80	
Val Val Ser Ser Arg Thr Gln Arg Lys Glu Ser Leu Phe Arg Glu Ile	-75	-70	-65	
Arg Ala Gln Ala Arg Ala Leu Gly Ala Ala Leu Ala Ser Glu Pro Leu	-60	-55	-50	
Pro Asp Pro Gly Thr Gly Thr Ala Ser Pro Arg Ala Val Ile Gly Gly	-45	-40	-35	
Arg Arg Arg Arg Arg Thr Ala Leu Ala Gly Thr Arg Thr Ala Gln Gly	-30	-25	-20	-15
Ser Gly Gly Gly Ala Gly Arg Gly His Gly Arg Arg Gly Arg Ser Arg	-10	-5	1	

Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys Glu Leu Gly Trp Asp
 5 10 15
 Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly
 20 25 30
 Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala
 35 40 45 50
 Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala
 55 60 65
 Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile
 70 75 80
 Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val
 85 90 95
 Glu Ala Cys Gly Cys Arg
 100

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1207 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Homo sapiens

(vii) IMMEDIATE SOURCE:

- (B) CLONE: MP52

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 845..1204

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

ACCGGGCGGC CCTGAACCCA AGCCAGGACA CCCTCCCCAA ACAAGGCAGG CTACAGCCCG	50
GACTGTGACC CCAAAGGAC AGCTTCCCGG AGGCAAGGCA CCCCCAAAAG CAGGATCTGT	100
CCCCAGCTCC TTCCTGCTGA AGAAGGCCAG GGAGCCCGGG CCCCCACGAG AGCCCAAGGA	150
GCCGTTTCGC CCACCCCCCA TCACACCCCA CGAGTACATG CTCTCGCTGT ACAGGACGCT	200
GTCCGATGCT GACAGAAAGG GAGGCAACAG CAGCGTGAAG TTGGAGGCTG GCCTGGCCAA	250
CACCATCACC AGCTTTATTG ACAAAGGGCA AGATGACCGA GGTCCCGTGG TCAGGAAGCA	300
GAGGTACGTG TTGACATTA GTGCCCTGGA GAAGGATGGG CTGCTGGGGG CCGAGCTCCG	350
GATCTTGCGG AAGAAGCCCT CGGACACGGC CAAGCCAGCG GCCCCCGGAG GCGGGCGGGC	400
TGCCCAGCTG AAGCTGTCCA GCTGCCCCAG CGGCCGGCAG CCGGCCTCCT TGCTGGATGT	450
GCGCTCCGTG CCAGGCCTGG ACGGATCTGG CTGGGAGGTG TTCGACATCT GGAAGCTCTT	500
CCGAAACTTT AAGAACTCGG CCCAGCTGTG CCTGGAGCTG GAGGCCTGGG AACGGGGCAG	550
GGCCGTGGAC CTCCGTGGCC TGGGCTTCGA CCGCGCCGCC CGGCAGGTCC ACGAGAGGC	600

0045133-033101
T01230-23154560

CCTGTTCTCTG GTGTTTGGCC GCACCAAGAA ACGGGACCTG TTCTTTAATG AGATTAAGGC	780
CCGCTCTGGC CAGGACGATA AGACCGTGTA TGAGTACCTG TTCAGCCAGC GGCGAAAACG	840
GCGG GCC CCA CTG GCC ACT CGC CAG GGC AAG CGA CCC AGC AAG AAC CTT Ala Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu 1 5 10 15	889
AAG GCT CGC TGC AGT CGG AAG GCA CTG CAT GTC AAC TTC AAG GAC ATG Lys Ala Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met 20 25 30	937
GGC TGG GAC GAC TGG ATC ATC GCA CCC CTT GAG TAC GAG GCT TTC CAC Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His 35 40 45	985
TGC GAG GGG CTG TGC GAG TTC CCA TTG CGC TCC CAC CTG GAG CCC ACG Cys Glu Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr 50 55 60	1033
AAT CAT GCA GTC ATC CAG ACC CTG ATG AAC TCC ATG GAC CCC GAG TCC Asn His Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser 65 70 75	1081
ACA CCA CCC ACC TGC TGT GTG CCC ACG CGG CTG AGT CCC ATC AGC ATC Thr Pro Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile 80 85 90 95	1129
CTC TTC ATT GAC TCT GCC AAC AAC GTG GTG TAT AAG CAG TAT GAG GAC Leu Phe Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp 100 105 110	1177
ATG GTC GTG GAG TCG TGT GGC TGC AGG TAG Met Val Val Glu Ser Cys Gly Cys Arg 115 120	1207

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 120 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Ala Pro Leu Ala Thr Arg Gln Gly Lys Arg Pro Ser Lys Asn Leu Lys 1 5 10 15
Ala Arg Cys Ser Arg Lys Ala Leu His Val Asn Phe Lys Asp Met Gly 20 25 30
Trp Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys 35 40 45
Glu Gly Leu Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn 50 55 60
His Ala Val Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr 65 70 75 80
Pro Pro Thr Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu 85 90 95

Phe Ile Asp Ser Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp Met
 100 105 110

Val Val Glu Ser Cys Gly Cys Arg
 115 120

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 128 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vi) ORIGINAL SOURCE:

- (A) ORGANISM: Homo Sapiens

(vii) IMMEDIATE SOURCE:

- (B) CLONE: V1-1 fragment

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 28..102

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GGATCCTGGA AGGATTGGAT CATTGCG CCG CTG GAC TAC GAG GCG TAC CAC 51
 Pro Leu Asp Tyr Glu Ala Tyr His
 1 5

TGC GAG GGC CTT TGC GAC TTC CCT TTG CGT TCG CAC CTC GAG CCC ACC 99
 Cys Glu Gly Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr
 10 15 20

AAC CACGCTATAG TCCAAACCTT TCTAGA 128
 Asn
 25

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly Leu Cys Asp Phe Pro
 1 5 10 15

Leu Arg Ser His Leu Glu Pro Thr Asn
 20 25

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 128 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

- (ii) MOLECULE TYPE: DNA (genomic)
- (vi) ORIGINAL SOURCE:
(A) ORGANISM: Homo Sapiens
- (vii) IMMEDIATE SOURCE:
(B) CLONE: VL-1
- (ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 28..102

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

GGATCCTGGG ATGACTGGAT TATGGCG CCG CTG GAC TAC GAG GCG TAC CAC 51
Pro Leu Asp Tyr Glu Ala Tyr His
1 5

TGC GAG GGT GTA TGC GAC TTC CCG CTG CGC TCG CAC CTG GAG CCC ACC 99
Cys Glu Gly Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr
10 15 20

AAC CACGCCATGC TACAAACGCT TCTAGA 128
Asn
25

(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 25 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro
1 5 10 15

Leu Arg Ser His Leu Glu Pro Thr Asn
20 25

(2) INFORMATION FOR SEQ ID NO:9:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 3585 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

- (vii) IMMEDIATE SOURCE:
(B) CLONE: pALV1-781

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

CTAACTACCC AACTCAAAAA AAAAAAAAAA AAAAACCCCC TCTAACCCCC ATTGACGAAA 60

GGGCCTCGTG ATACGCCTAT TTTTATAGGT TAATGTCATG ATAATAATGG TTTCTTAGAC 120

GTCAGGTGGC ACTTTTCGGG GAAATGTGCG CGGAACCCCT ATTTGTTTAT TTTTCTAAAT 180

ACATTCAAAT ATGTATCCGC TCATGAGACA ATAACCCTGA TAAATGCTTC AATAATATTG	240
AAAAAGGAAG AGTATGAGTA TTCAACATTT CCGTGTGCGC CTTATTCCTT TTTTTCGGGC	300
ATTTTGCCTT CCTGTTTTTG CTCACCCAGA AACGCTGGTG AAAGTAAAAG ATGCTGAAGA	360
TCAGTTGGGT GCACGAGTGG GTTACATCGA ACTGGATCTC AACAGCGGTA AGATCCTTGA	420
GAGTTTTTCGC CCCGAAGAAC GTTTTCCAAT GATGAGCACT TTTAAAGTTC TGCTATGTGG	480
CGCGGTATTA TCCCGTATTG ACGCCGGGCA AGAGCAACTC GGTGCGCGCA TACACTATTC	540
TCAGAATGAC TTGGTTGAGT ACTCACCAGT CACAGAAAAG CATCTTACGG ATGGCATGAC	600
AGTAAGAGAA TTATGCAGTG CTGCCATAAC CATGAGTGAT AACACTGCGG CCAACTTACT	660
TCTGACAACG ATCGGAGGAC CGAAGGAGCT AACCGCTTTT TTGCACAACA TGGGGGATCA	720
TGTAAGTCGC CTTGATCGTT GGGAAACCGGA GCTGAATGAA GCCATACCAA ACGACGAGCG	780
TGACACCACG ATGCCTGTAG CAATGGCAAC AACGTTGCGC AAACATTAA CTGGCGAACT	840
ACTTACTCTA GCTTCCCGGC AACAAATTAAT AGACTGGATG GAGGCGGATA AAGTTGCAGG	900
ACCACTTCTG CGCTCGGCCC TTCCGGCTGG CTGGTTTATT GCTGATAAAT CTGGAGCCGG	960
TGAGCGTGGG TCTCGCGGTA TCATTGCAGC ACTGGGGCCA GATGGTAAGC CCTCCCGTAT	1020
CGTAGTTATC TACACGACGG GGAGTCAGGC AACTATGGAT GAACGAAATA GACAGATCGC	1080
TGAGATAGGT GCCTCACTGA TTAAGCATTG GTAAGTGTCA GACCAAGTTT ACTCATATAT	1140
ACTTTAGATT GATTTAAAAC TTCATTTTTA ATTTAAAAGG ATCTAGGTGA AGATCCTTTT	1200
TGATAATCTC ATGACCAAAA TCCCTTAACG TGAGTTTTTCG TTCCACTGAG CGTCAGACCC	1260
CGTAGAAAAG ATCAAAGGAT CTTCTTGAGA TCCTTTTTTT CTGCGCGTAA TCTGCTGCTT	1320
GCAAACAAAA AAACCACCGC TACCAGCGGT GGTGTTGTTG CCGGATCAAG AGCTACCAAC	1380
TCTTTTTCCG AAGGTAACTG GCTTCAGCAG AGCGCAGATA CCAAATACTG TCCTTCTAGT	1440
GTAGCCGTAG TTAGGCCACC ACTTCAAGAA CTCTGTAGCA CCGCCTACAT ACCTCGCTCT	1500
GCTAATCCTG TTACCACTGG CTGCTGCCAG TGGCGATAAG TCGTGTCTTA CCGGGTTGGA	1560
CTCAAGACGA TAGTTACCGG ATAAGGCGCA GCGGTCGGGC TGAACGGGGG GTTCGTGCAC	1620
ACAGCCCAGC TTGGAGCGAA CGACCTACAC CGAAGTGAAG TACCTACAGC GTGAGCATTG	1680
AGAAAGCGCC ACGCTTCCCG AAGGGAGAAA GGCGGACAGG TATCCGGTAA GCGGCAGGGT	1740
CGGAACAGGA GAGCGCACGA GGGAGCTTCC AGGGGGAAAC GCCTGGTATC TTTATAGTCC	1800
TGTCGGGTTT CGCCACCTCT GACTTGAGCG TCGATTTTTG TGATGCTCGT CAGGGGGGCG	1860
GAGCCTATGG AAAACGCCA GCAACGCGGC CTTTTTACGG TTCCTGGCCT TTTGCTGGCC	1920
TTTTGCTCAC ATGTTCTTTC CTGCGTTATC CCCTGATTCT GTGGATAACC GTATTACCGC	1980
CTTTGAGTGA GCTGATACCG CTCGCCGAG CCGAACGACC GAGCGCAGCG AGTCAGTGAG	2040
CGAGGAAGCG GAAGAGCGCC CAATACGCAA ACCGCTCTC CCGCGCGGTT GGCCGATTCA	2100
TTAATGCAGA ATTGATCTCT CACCTACCAA ACAATGCCCC CCTGCAAAAA ATAAATTCAT	2160
ATAAALACA TACAGATAAC CATCTGCGGT GATAAATTAT CTCTGGCGGT GTTGACATAA	2220

ATACCACTGG CGGTGATACT GAGCACATCA GCAGGACGCA CTGACCACCA TGAAGGTGAC 2280
 GCTCTTAAAA ATTAAGCCCT GAAGAAGGGC AGCATTCAAA GCAGAAGGCT TTGGGGTGTG 2340
 TGATACGAAA CGAAGCATTG GCCGTAAGTG CGATTCCGGA TTAGCTGCCA ATGTGCCAAT 2400
 CGCGGGGGGT TTTCGTTCAG GACTACAACT GCCACACACC ACCAAAGCTA ACTGACAGGA 2460
 GAATCCAGAT GGATGCACAA ACACGCCGCC GCGAACGTCG CGCAGAGAAA CAGGCTCAAT 2520
 GGAAAGCAGC AAATCCCCTG TTGGTTGGGG TAAGCGCAA ACCAGTTCCG AAAGATTTTT 2580
 TTAATAATAA ACGCTGATGG AAGCGTTTAT GCGGAAGAGG TAAAGCCCTT CCCGAGTAAC 2640
 AAAAAAACAA CAGCATAAAT AACCCCGCTC TTACACATTC CAGCCCTGAA AAAGGGCATC 2700
 AAATTAAACC ACACCTATGG TGTATGCATT TATTTGCATA CATTCAATCA ATTGTTATCT 2760
 AAGGAAATAC TTACATATGT CTCGTTGTTT TCGTAAACCA CTGCATGTAG ATTTTAAAGA 2820
 GCTCGGCTGG GACGACTGGA TCATCGCGCC GCTGGACTAC GAGGCGTACC ACTGCGAGGG 2880
 CCTTTGCGAC TTCCCTTTGC GTTCGCACCT CGAGCCCACC AACCATGCCA TCATTCAGAC 2940
 GCTGCTCAAC TCCATGGCAC CAGACGCGGC GCCGGCCTCC TGCTGTGTGC CAGCGCGCCT 3000
 CAGCCCCATC AGCATCCTCT ACATCGACGC CGCCAACAAC GTTGTCTACA AGCAATACGA 3060
 GGACATGGTG GTGGAGGCCT GCGGCTGCAG GTAGTCTAGA GTCGACCTGC AGTAATCGTA 3120
 CAGGGTAGTA CAAATAAAAA AGGCACGTCA GATGACGTGC CTTTTTCTT GTGAGCAGTA 3180
 AGCTTGGCAC TGGCCGTCGT TTTACAACGT CGTGACTGGG AAAACCCTGG CGTTACCCAA 3240
 CTTAATCGCC TTGCAGCACA TCCCCTTTC GCCAGCTGGC GTAATAGCGA AGAGGCCCCG 3300
 ACCGATCGCC CTTCCCAACA GTTGCGCAGC CTGAATGGCG AATGGCGCCT GATGCGGTAT 3360
 TTTCTCCTTA CGCATCTGTG CGGTATTTC CACCGCATAT ATGGTGCACT CTCAGTACAA 3420
 TCTGCTCTGA TGCCGCATAG TTAAGCCAGC CCCGACACCC GCCAACACCC GCTGACGCGC 3480
 CCTGACGGGC TTGTCTGCTC CCGGCATCCG CTTACAGACA AGCTGTGACC GTCTCCGGGA 3540
 GCTGCATGTG TCAGAGGTTT TCACCGTCAT CACCGAAACG CGCGA 3585

(2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 272 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: DNA (genomic)
- (vi) ORIGINAL SOURCE:
 - (A) ORGANISM: mouse
- (vii) IMMEDIATE SOURCE:
 - (B) CLONE: mV1
- (ix) FEATURE:
 - (A) NAME/KEY: CDS
 - (B) LOCATION: 28..243

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

GGATCCAAGG AGCTCGGCTG GGACGAC TGG ATC ATC GCG CCA TTA GAC TAC	51
Trp Ile Ile Ala Pro Leu Asp Tyr	
1 5	
GAG GCA TAC CAC TGC GAG GGC GTT TGC GAC TTT CCT CTG CGC TCG CAC	99
Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro Leu Arg Ser His	
10 15 20	
CTG GAG CCT ACC AAC CAC GCC ATC ATT CAG ACG CTG CTC AAC TCC ATG	147
Leu Glu Pro Thr Asn His Ala Ile Ile Gln Thr Leu Leu Asn Ser Met	
25 30 35 40	
GCG CCC GAC GCT GCG CCA GCC TCC TGC TGC GTG CCC GCA AGG CTC AGT	195
Ala Pro Asp Ala Ala Pro Ala Ser Cys Cys Val Pro Ala Arg Leu Ser	
45 50 55	
CCC ATC AGC ATT CTC TAC ATC GAT GCC GCC AAC AAC GTG GTC TAC AAG	243
Pro Ile Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn Val Val Tyr Lys	
60 65 70	
CAATACGAGG ACATGGTGGT GGGGAATTC	272

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 72 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly Val	
1 5 10 15	
Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Ile	
20 25 30	
Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala Ser	
35 40 45	
Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile Asp	
50 55 60	
Ala Ala Asn Asn Val Val Tyr Lys	
65 70	

(2) INFORMATION FOR SEQ ID NO:12:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 272 base pairs
 (B) TYPE: nucleic acid
 (C) STRANDEDNESS: single
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vi) ORIGINAL SOURCE:
 (A) ORGANISM: mouse

(vii) IMMEDIATE SOURCE:
 (B) CLONE: mv2

(ix) FEATURE:

- (A) NAME/KEY: CDS
(B) LOCATION: 28..243

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GGATCCAAGG AGCTCGGCTG GGACGAC TGG ATT ATC GCG CCC CTA GAG TAC 51
Trp Ile Ile Ala Pro Leu Glu Tyr
1 5

GAG GCC TAT CAC TGC GAG GGC GTG TGC GAC TTT CCG CTG CGC TCG CAC 99
Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro Leu Arg Ser His
10 15 20

CTT GAG CCC ACT AAC CAT GCC ATC ATT CAG ACG CTG ATG AAC TCC ATG 147
Leu Glu Pro Thr Asn His Ala Ile Ile Gln Thr Leu Met Asn Ser Met
25 30 35 40

GAC CCG GGC TCC ACC CCG CCT AGC TGC TGC GTT CCC ACC AAA CTG ACT 195
Asp Pro Gly Ser Thr Pro Pro Ser Cys Cys Val Pro Thr Lys Leu Thr
45 50 55

CCC ATT AGC ATC CTG TAC ATC GAC GCG GGC AAT AAT GTA GTC TAC AAG 243
Pro Ile Ser Ile Leu Tyr Ile Asp Ala Gly Asn Asn Val Val Tyr Lys
60 65 70

CAATACGAGG ACATGGTGGT GGGGAATTC 272

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 72 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Tyr His Cys Glu Gly Val
1 5 10 15

Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Ile
20 25 30

Ile Gln Thr Leu Met Asn Ser Met Asp Pro Gly Ser Thr Pro Pro Ser
35 40 45

Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile Asp
50 55 60

Ala Gly Asn Asn Val Val Tyr Lys
65 70

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 272 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vi) ORIGINAL SOURCE:
(A) ORGANISM: mouse

(vii) IMMEDIATE SOURCE:
(B) CLONE: mV9

(ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 28..243

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

GGATCCAAGG AGCTCGGCTG GGACGAC TGG ATC ATC GCA CCT CTT GAG TAT 51
Trp Ile Ile Ala Pro Leu Glu Tyr
1 5

GAG GCC TTC CAC TGC GAA GSA CTG TGT GAG TTC CCC TTG CGC TCC CAC 99
Glu Ala Phe His Cys Glu Gly Leu Cys Glu Phe Pro Leu Arg Ser His
10 15 20

TTG GAG CCC ACA AAC CAC GCA GTC ATT CAG ACC CTA ATG AAC TCT ATG 147
Leu Glu Pro Thr Asn His Ala Val Ile Gln Thr Leu Met Asn Ser Met
25 30 35 40

GAC CCT GAA TCC ACA CCA CCC ACT TGT TGT GTG CCT ACA CGG CTG AGT 195
Asp Pro Glu Ser Thr Pro Pro Thr Cys Cys Val Pro Thr Arg Leu Ser
45 50 55

CCT ATT AGC ATC CTC TTC ATC GAC TCT GCC AAC AAC GTG GTG TAT AAA 243
Pro Ile Ser Ile Leu Phe Ile Asp Ser Ala Asn Asn Val Val Tyr Lys
60 65 70

CAATACGAGG ACATGGTGGT GGGGAATTC 272

(2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 72 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Phe His Cys Glu Gly Leu
1 5 10 15

Cys Glu Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Val
20 25 30

Ile Gln Thr Leu Met Asn Ser Met Asp Pro Glu Ser Thr Pro Pro Thr
35 40 45

Cys Cys Val Pro Thr Arg Leu Ser Pro Ile Ser Ile Leu Phe Ile Asp
50 55 60

Ser Ala Asn Asn Val Val Tyr Lys
65 70

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 7 amino acids
(B) TYPE: amino acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vi) ORIGINAL SOURCE:

(A) ORGANISM: BMP/TGF-beta consensus sequence

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Trp Xaa Asp Trp Ile Xaa Ala
1 5

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 27 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: oligonucleotide #1

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

CGGATCCTGG VANGAYTGGA THRTNGC

27

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 6 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(vii) IMMEDIATE SOURCE:

(B) CLONE: BMP/TGF-beta consensus sequence

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

His Ala Ile Xaa Gln Thr
1 5

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: oligonucleotide #2

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

TTTCTAGAAR NGTYTGNACD ATNGCRTG

28

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 40 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: oligonucleotide #3

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

CCACTGCGAG GGCCTTTGCG ACTTCCCTTT GCGTTCGCAC

40

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(A) LIBRARY: oligonucleotide #4

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

TGCGGATCCA GCCGCTGCAG CCGCAAGCC

29

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 29 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: oligonucleotide #5

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

GACTCTAGAC TACCTGCAGC CGCAGGCCT

29

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(A) LIBRARY: oligonucleotide #6

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

GCGGATCCAA GGAGCTCGGC TGGGACGA

28

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 28 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: oligonucleotide #7

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

GGAATTCCCC ACCACCATGT CCTCGTAT

28

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 1171 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

(B) CLONE: Human VL-1 protein

(ix) FEATURE:

(A) NAME/KEY: CDS

(B) LOCATION: 2..964

(ix) FEATURE:

(A) NAME/KEY: mat_peptide

(B) LOCATION: 605..964

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

G AAT TCG GAT CTC TCG CAC ACT CCT CTC CGG AGA CAG AAG TAT TTG
Asn Ser Asp Leu Ser His Thr Pro Leu Arg Arg Gln Lys Tyr Leu
-201-200 -195 -190

46

TTT GAT GTG TCC ATG CTC TCA GAC AAA GAA GAG CTG GTG GGC GCG GAG
Phe Asp Val Ser Met Leu Ser Asp Lys Glu Glu Leu Val Gly Ala Glu
-185 -180 -175

94

CTG Leu -170	CGG Arg	CTC Leu	TTT Phe	CTC Arg	CGC Gln -165	GCG Ala	CCC Pro	TCA Ser	GCG Ala	CCC Pro -160	TGG Trp	GGG Gly	CCA Pro	CCA Pro	GCC Ala -155	142
GGG Gly	CCG Pro	CTC Leu	CAC His	GTG Val -150	CAG Gln	CTC Leu	TTC Phe	CCT Pro	TGC Cys -145	CTT Leu	TCG Ser	CCC Pro	CTA Leu	CTG Leu -140	CTG Leu	190
GAC Asp	GCG Ala	CGG Arg	ACC Thr -135	CTG Leu	GAC Asp	CCG Pro	CAG Gln	GGG Gly -130	GCG Ala	CCG Pro	CCG Pro	GCC Ala	GGC Gly -125	TGG Trp	GAA Glu	238
GTC Val	TTC Phe	GAC Asp -120	GTG Val	TGG Trp	CAG Gln	GGC Gly	CTG Leu -115	CGC Arg	CAC His	CAG Gln	CCC Pro	TGG Trp -110	AAG Lys	CAG Gln	CTG Leu	286
TGC Cys	TTG Leu -105	GAG Glu	CTG Leu	CGG Arg	GCC Ala	GCA Ala -100	TGG Trp	GGC Gly	GAG Glu	CTG Leu	GAC Asp -95	GCC Ala	GGG Gly	GAG Glu	GCC Ala	334
GAG Glu -90	GCG Ala	CGC Arg	GCG Ala	CGG Arg	GGA Gly -85	CCC Pro	CAG Gln	CAA Gln	CCG Pro -80	CCG Pro	CCC Pro	CCG Pro	GAC Asp	CTG Leu	CGG Arg -75	382
AGT Ser	CTG Leu	GGC Gly	TTC Phe	GGC Gly -70	CGG Arg	AGG Arg	GTG Val	CGG Arg	CCT Pro -65	CCC Pro	CAG Gln	GAG Glu	CGG Arg	GCC Ala -60	CTG Leu	430
CTG Leu	GTG Val	GTA Val	TTC Phe -55	ACC Thr	AGA Arg	TCC Ser	CAG Gln	CGC Arg -50	AAG Lys	AAC Asn	CTG Leu	TTC Phe	GCA Ala -45	GAG Glu	ATG Met	478
CGC Arg	GAG Glu -40	CAG Gln	CTG Leu	GGC Gly	TCG Ser	GCC Ala	GAG Glu -35	GCT Ala	GCG Ala	GGC Gly	CCG Pro	GGC Gly -30	GCG Ala	GGC Gly	GCC Ala	526
GAG Glu	GGG Gly -25	TCG Ser	TGG Trp	CCG Pro	CCG Pro	CCG Pro -20	TCG Ser	GGC Gly	GCC Ala	CCG Pro	GAT Asp -15	GCC Ala	AGG Arg	CCT Pro	TGG Trp	574
CTG Leu -10	CCC Pro	TCG Ser	CCC Pro	GGC Gly	CGC Arg -5	CGG Arg	CGG Arg	CGG Arg	CGC Arg	ACG Thr 1	GCC Ala	TTC Phe	GCC Ala	AGT Ser 5	CGC Arg	622
CAT His	GGC Gly	AAG Lys	CGG Arg 10	CAC His	GGC Gly	AAG Lys	AAG Lys	TCC Ser 15	AGG Arg	CTA Leu	CGC Arg	TGC Cys	AGC Ser 20	AAG Lys	AAG Lys	670
CCC Pro	CTG Leu	CAC His 25	GTG Val	AAC Asn	TTC Phe	AAG Lys	GAG Glu 30	CTG Leu	GGC Gly	TGG Trp	GAC Asp	GAC Asp 35	TGG Trp	ATT Ile	ATC Ile	718
GCG Ala	CCC Pro 40	CTG Leu	GAG Glu	TAC Tyr	GAG Glu	GCC Ala 45	TAT Tyr	CAC His	TGC Cys	GAG Glu	GGT Gly 50	GTA Val	TGC Cys	GAC Asp	TTC Phe	766
CCG Pro 55	CTG Leu	CGC Arg	TCG Ser	CAC His	CTG Leu 60	GAG Glu	CCC Pro	ACC Thr	AAC Asn	CAC His 65	GCC Ala	ATC Ile	ATC Ile	CAG Gln	ACG Thr 70	814
CTG Leu	ATG Met	AAC Asn	TCC Ser	ATG Met 75	GAC Asp	CCC Pro	GGC Gly	TCC Ser	ACC Thr 80	CCG Pro	CCC Pro	AGC Ser	TGC Cys	TGC Cys 85	GTG Val	862
CCC Pro	ACC Thr	AAA Lys	TTG Leu 90	ACT Thr	CCC Pro	ATC Ile	AGC Ser	ATT Ile 95	CTA Leu	TAC Tyr	ATC Ile	GAC Asp 100	GCG Ala	GGC Gly	AAT Asn	910

AAT GTG GTC TAC AAG CAG TAC GAG GAC ATG GTG GTG GAG TCG TGC GGC 958
 Asn Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys Gly
 105 110 115

TGC AGG TAGCGGTGCC TTTCCCGCCG CCTTGGCCCCG GAACCAAGGT GGGCCAAGGT 1014
 Cys Arg
 120

CCGCCTTGCA GGGGAGGCCT GGCTGCAGAG AGGCGGAGGA GGAAGCTGGC GCTGGGGGAG 1074

GCTGAGGGTG AGGGAACAGC CTGGATGTGA GAGCCGGTGG GAGAGAAGGG AGCGCACCTT 1134

CCCAGTAACT TCTACCTGCC AGCCAGAGG GAAATAT 1171

(2) INFORMATION FOR SEQ ID NO:26:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 321 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Asn Ser Asp Leu Ser His Thr Pro Leu Arg Arg Gln Lys Tyr Leu Phe
 -201 -200 -195 -190

Asp Val Ser Met Leu Ser Asp Lys Glu Glu Leu Val Gly Ala Glu Leu
 -185 -180 -175 -170

Arg Leu Phe Arg Gln Ala Pro Ser Ala Pro Trp Gly Pro Pro Ala Gly
 -165 -160 -155

Pro Leu His Val Gln Leu Phe Pro Cys Leu Ser Pro Leu Leu Leu Asp
 -150 -145 -140

Ala Arg Thr Leu Asp Pro Gln Gly Ala Pro Pro Ala Gly Trp Glu Val
 -135 -130 -125

Phe Asp Val Trp Gln Gly Leu Arg His Gln Pro Trp Lys Gln Leu Cys
 -120 -115 -110

Leu Glu Leu Arg Ala Ala Trp Gly Glu Leu Asp Ala Gly Glu Ala Glu
 -105 -100 -95 -90

Ala Arg Ala Arg Gly Pro Gln Gln Pro Pro Pro Pro Asp Leu Arg Ser
 -85 -80 -75

Leu Gly Phe Gly Arg Arg Val Arg Pro Pro Gln Glu Arg Ala Leu Leu
 -70 -65 -60

Val Val Phe Thr Arg Ser Gln Arg Lys Asn Leu Phe Ala Glu Met Arg
 -55 -50 -45

Glu Gln Leu Gly Ser Ala Glu Ala Ala Gly Pro Gly Ala Gly Ala Glu
 -40 -35 -30

Gly Ser Trp Pro Pro Pro Ser Gly Ala Pro Asp Ala Arg Pro Trp Leu
 -25 -20 -15 -10

Pro Ser Pro Gly Arg Arg Arg Arg Arg Thr Ala Phe Ala Ser Arg His
 -5 1 5

Gly Lys Arg His Gly Lys Lys Ser Arg Leu Arg Cys Ser Lys Lys Pro
 10 15 20

004510-0010

Leu His Val Asn Phe Lys Glu Leu Gly Trp Asp Asp Trp Ile Ile Ala
 25 30 35
 Pro Leu Glu Tyr Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro
 40 45 50 55
 Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Ile Ile Gln Thr Leu
 60 65 70
 Met Asn Ser Met Asp Pro Gly Ser Thr Pro Pro Ser Cys Cys Val Pro
 75 80 85
 Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr Ile Asp Ala Gly Asn Asn
 90 95 100
 Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ser Cys Gly Cys
 105 110 115
 Arg
 120

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1233 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:

- (B) CLONE: DNA encoding BMP2 propeptide/BMP-12 mature peptide

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..1233

(ix) FEATURE:

- (A) NAME/KEY: mat_peptide
- (B) LOCATION: 847..1233

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

ATG GTG GCC GGG ACC CGC TGT CTT CTA GCG TTG CTG CTT CCC CAG GTC	48
Met Val Ala Gly Thr Arg Cys Leu Leu Ala Leu Leu Leu Pro Gln Val	
-282 -280 -275 -270	
CTC CTG GGC GGC GCG GCT GGC CTC GTT CCG GAG CTG GGC CGC AGG AAG	96
Leu Leu Gly Gly Ala Ala Gly Leu Val Pro Glu Leu Gly Arg Arg Lys	
-265 -260 -255	
TTC GCG GCG GCG TCG TCG GGC CGC CCC TCA TCC CAG CCC TCT GAC GAG	144
Phe Ala Ala Ala Ser Ser Gly Arg Pro Ser Ser Gln Pro Ser Asp Glu	
-250 -245 -240 -235	
GTC CTG AGC GAG TTC GAG TTG CGG CTG CTC AGC ATG TTC GGC CTG AAA	192
Val Leu Ser Glu Phe Glu Leu Arg Leu Leu Ser Met Phe Gly Leu Lys	
-230 -225 -220	
CAG AGA CCC ACC CCC AGC AGG GAC GCC GTG GTG CCC CCC TAC ATG CTA	240
Gln Arg Pro Thr Pro Ser Arg Asp Ala Val Val Pro Pro Tyr Met Leu	
-215 -210 -205	

GAC Asp	CTG Leu	TAT Tyr	CGC Arg	AGG Arg	CAC His	TCA Ser	GGT Gly	CAG Gln	CCG Pro	GGC Gly	TCA Ser	CCC Pro	GCC Ala	CCA Pro	GAC Asp	288
		-200					-195					-190				
CAC His	CGG Arg	TTG Leu	GAG Glu	AGG Arg	GCA Ala	GCC Ala	AGC Ser	CGA Arg	GCC Ala	AAC Asn	ACT Thr	GTG Val	CGC Arg	AGC Ser	TTC Phe	336
	-185					-180					-175					
CAC His	CAT His	GAA Glu	GAA Glu	TCT Ser	TTG Leu	GAA Glu	GAA Glu	CTA Leu	CCA Pro	GAA Glu	ACG Thr	AGT Ser	GGG Gly	AAA Lys	ACA Thr	384
	-170				-165				-160						-155	
ACC Thr	CGG Arg	AGA Arg	TTC Phe	TTC Phe	TTT Phe	AAT Asn	TTA Leu	AGT Ser	TCT Ser	ATC Ile	CCC Pro	ACG Thr	GAG Glu	GAG Glu	TTT Phe	432
				-150					-145					-140		
ATC Ile	ACC Thr	TCA Ser	GCA Ala	GAG Glu	CTT Leu	CAG Gln	GTT Val	TTT Phe	CGA Arg	GAA Glu	CAG Gln	ATG Met	CAA Gln	GAT Asp	GCT Ala	480
			-135					-130					-125			
TTA Leu	GGA Gly	AAC Asn	AAT Asn	AGC Ser	AGT Ser	TTC Phe	CAT His	CAC His	CGA Arg	ATT Ile	AAT Asn	ATT Ile	TAT Tyr	GAA Glu	ATC Ile	528
		-120					-115					-110				
ATA Ile	AAA Lys	CCT Pro	GCA Ala	ACA Thr	GCC Ala	AAC Asn	TCG Ser	AAA Lys	TTC Phe	CCC Pro	GTG Val	ACC Thr	AGA Arg	CTT Leu	TTG Leu	576
	-105					-100					-95					
GAC Asp	ACC Thr	AGG Arg	TTG Leu	GTG Val	AAT Asn	CAG Gln	AAT Asn	GCA Ala	AGC Ser	AGG Arg	TGG Trp	GAA Glu	AGT Ser	TTT Phe	GAT Asp	624
	-90				-85					-80					-75	
GTC Val	ACC Thr	CCC Pro	GCT Ala	GTG Val	ATG Met	CGG Arg	TGG Trp	ACT Thr	GCA Ala	CAG Gln	GGA Gly	CAC His	GCC Ala	AAC Asn	CAT His	672
				-70					-65					-60		
GGA Gly	TTC Phe	GTG Val	GTG Val	GAA Glu	GTG Val	GCC Ala	CAC His	TTG Leu	GAG Glu	GAG Glu	AAA Lys	CAA Gln	GGT Gly	GTC Val	TCC Ser	720
		-55						-50					-45			
AAG Lys	AGA Arg	CAT His	GTT Val	AGG Arg	ATA Ile	AGC Ser	AGG Arg	TCT Ser	TTG Leu	CAC His	CAA Gln	GAT Asp	GAA Glu	CAC His	AGC Ser	768
		-40					-35					-30				
TGG Trp	TCA Ser	CAG Gln	ATA Ile	AGG Arg	CCA Pro	TTG Leu	CTA Leu	GTA Val	ACT Thr	TTT Phe	GGC Gly	CAT His	GAT Asp	GGA Gly	AAA Lys	816
	-25					-20					-15					
GGG Gly	CAT His	CCT Pro	CTC Leu	CAC His	AAA Lys	AGA Arg	GAA Glu	AAA Lys	CGT Arg	ACG Thr	GCG Ala	TTG Leu	GCC Ala	GGG Gly	ACG Thr	864
	-10				-5					1				5		
CGG Arg	ACA Thr	GCG Ala	CAG Gln	GGC Gly	AGC Ser	GGC Gly	GGG Gly	GGC Gly	GCG Ala	GGC Gly	CGG Arg	GGC Gly	CAC His	GGG Gly	CGC Arg	912
			10				15						20			
AGG Arg	GGC Gly	CGG Arg	AGC Ser	CGC Arg	TGC Cys	AGC Ser	CGC Arg	AAG Lys	CCG Pro	TTG Leu	CAC His	GTG Val	GAC Asp	TTC Phe	AAG Lys	960
		25					30					35				
GAG Glu	CTC Leu	GGC Gly	TGG Trp	GAC Asp	GAC Asp	TGG Trp	ATC Ile	ATC Ile	GCG Ala	CCG Pro	CTG Leu	GAC Asp	TAC Tyr	GAG Glu	GCG Ala	1008
	40					45					50					
TAC Tyr	CAC His	TGC Cys	GAG Glu	GGC Gly	CTT Leu	TGC Cys	GAC Asp	TTC Phe	CCT Pro	TTG Leu	CGT Arg	TCG Ser	CAC His	CTC Leu	GAG Glu	1056
					60					65					70	

CCC ACC AAC CAT GCC ATC ATT CAG ACG CTG CTC AAC TCC ATG GCA CCA	1104
Pro Thr Asn His Ala Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro	
75 80 85	
GAC GCG GCG CCG GCC TCC TGC TGT GTG CCA GCG CGC CTC AGC CCC ATC	1152
Asp Ala Ala Pro Ala Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile	
90 95 100	
AGC ATC CTC TAC ATC GAC GCC GCC AAC AAC GTT GTC TAC AAG CAA TAC	1200
Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr	
105 110 115	
GAG GAC ATG GTG GTG GAG GCC TGC GGC TGC AGG	1233
Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg	
120 125	

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 411 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Met Val Ala Gly Thr Arg Cys Leu Leu Ala Leu Leu Leu Pro Gln Val	
-282 -280 -275 -270	
Leu Leu Gly Gly Ala Ala Gly Leu Val Pro Glu Leu Gly Arg Arg Lys	
-265 -260 -255	
Phe Ala Ala Ala Ser Ser Gly Arg Pro Ser Ser Gln Pro Ser Asp Glu	
-250 -245 -240 -235	
Val Leu Ser Glu Phe Glu Leu Arg Leu Leu Ser Met Phe Gly Leu Lys	
-230 -225 -220	
Gln Arg Pro Thr Pro Ser Arg Asp Ala Val Val Pro Pro Tyr Met Leu	
-215 -210 -205	
Asp Leu Tyr Arg Arg His Ser Gly Gln Pro Gly Ser Pro Ala Pro Asp	
-200 -195 -190	
His Arg Leu Glu Arg Ala Ala Ser Arg Ala Asn Thr Val Arg Ser Phe	
-185 -180 -175	
His His Glu Glu Ser Leu Glu Glu Leu Pro Glu Thr Ser Gly Lys Thr	
-170 -165 -160 -155	
Thr Arg Arg Phe Phe Phe Asn Leu Ser Ser Ile Pro Thr Glu Glu Phe	
-150 -145 -140	
Ile Thr Ser Ala Glu Leu Gln Val Phe Arg Glu Gln Met Gln Asp Ala	
-135 -130 -125	
Leu Gly Asn Asn Ser Ser Phe His His Arg Ile Asn Ile Tyr Glu Ile	
-120 -115 -110	
Ile Lys Pro Ala Thr Ala Asn Ser Lys Phe Pro Val Thr Arg Leu Leu	
-105 -100 -95	
Asp Thr Arg Leu Val Asn Gln Asn Ala Ser Arg Trp Glu Ser Phe Asp	
-90 -85 -80 -75	

00945182-08100-101280-28754660

Val Thr Pro Ala Val Met Arg Trp Thr Ala Gln Gly His Ala Asn His
-70 -65 -60

Gly Phe Val Val Glu Val Ala His Leu Glu Glu Lys Gln Gly Val Ser
-55 -50 -45

Lys Arg His Val Arg Ile Ser Arg Ser Leu His Gln Asp Glu His Ser
-40 -35 -30

Trp Ser Gln Ile Arg Pro Leu Leu Val Thr Phe Gly His Asp Gly Lys
-25 -20 -15

Gly His Pro Leu His Lys Arg Glu Lys Arg Thr Ala Leu Ala Gly Thr
-10 -5 1 5

Arg Thr Ala Gln Gly Ser Gly Gly Gly Ala Gly Arg Gly His Gly Arg
10 15 20

Arg Gly Arg Ser Arg Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys
25 30 35

Glu Leu Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala
40 45 50

Tyr His Cys Glu Gly Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu
55 60 65 70

Pro Thr Asn His Ala Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro
75 80 85

Asp Ala Ala Pro Ala Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile
90 95 100

Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr
105 110 115

Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg
120 125

(2) INFORMATION FOR SEQ ID NO:29:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 1203 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(vii) IMMEDIATE SOURCE:
(B) CLONE: murine MV1

(ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 2..721

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

A AAG TTC TGC CTG GTG CTG GNG NCG GTG ACG GCC TCG GAG AGC AGN 46
Lys Phe Cys Leu Val Leu X01 X02 Val Thr Ala Ser Glu Ser X03
1 5 10 15

CNG CTG GCC CTG AGA CGA CTG GGC TTC GGC TGN CCG GGC GGT GGC GAC 94
X04 Leu Ala Leu Arg Arg Leu Gly Phe Gly X05 Pro Gly Gly Asp
20 25 30

GGC GGC GGC ACT GCG GNC GAG GAG CGC GCG CTG TTG GTG ATC TCC TCC Gly Gly Gly Thr Ala X06 Glu Glu Arg Ala Leu Leu Val Ile Ser Ser 35 40 45	142
CGT ACG CAA AGG AAA GAG AGT CTG TTC CGG GAG ATC CGA GCC CAG GCC Arg Thr Gln Arg Lys Glu Ser Leu Phe Arg Glu Ile Arg Ala Gln Ala 50 55 60	190
CGT GCT CTC CGG GCC GCT GCA GAG CCG CCA CCG GAT CCA GGA CCA GGC Arg Ala Leu Arg Ala Ala Ala Glu Pro Pro Pro Asp Pro Gly Pro Gly 65 70 75	238
GCT GGG TCA CGC AAA GCC AAC CTG GGC GGT CGC AGG CGG CAG CGG ACT Ala Gly Ser Arg Lys Ala Asn Leu Gly Gly Arg Arg Arg Gln Arg Thr 80 85 90 95	286
GCG CTG GCT GGG ACT CGG GGA GNG NAG GGA AGC GGT GGT GGC GGC GGT Ala Leu Ala Gly Thr Arg Gly X07 X08 Gly Ser Gly Gly Gly Gly Gly 100 105 110	334
GGC GGT GGC GGC GGC GGC GGC GGC GGC GGC GGC GGC GGC GGC GCA Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Ala 115 120 125	382
GGC AGG GGC CAC GGG CGC AGA GGC CGG AGC CGC TGC GGT CGC AAG TCA Gly Arg Gly His Gly Arg Arg Gly Arg Ser Arg Cys Gly Arg Lys Ser 130 135 140	430
CTG CAC GTG GAC TTT AAG GAG CTG GGC TGG GAC GAC TGG ATC ATC GCG Leu His Val Asp Phe Lys Glu Leu Gly Trp Asp Asp Trp Ile Ile Ala 145 150 155	478
CCA TTA GAC TAC GAG GCA TAC CAC TGC GAG GGC GTT TGC GAC TTT CCT Pro Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro 160 165 170 175	526
CTG CGC TCG CAC CTG GAG CCT ACC AAC CAC GCC ATC ATT CAG ACG CTG Leu Arg Ser His Leu Glu Pro Thr Asn His Ala Ile Ile Gln Thr Leu 180 185 190	574
CTC AAC TCC ATG GCG CCC GAC GCT GCG CCA GCC TCC TGC TGC GTG CCC Leu Asn Ser Met Ala Pro Asp Ala Ala Pro Ala Ser Cys Cys Val Pro 195 200 205	622
GCA AGG CTC AGT CCC ATC AGC ATT CTC TAC ATC GAT GCC GCC AAC AAC Ala Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn 210 215 220	670
GTG GTC TAC AAG CAG TAC GAA GAC ATG GTG GTG GAG GCC TGC GGC TGC Val Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ala Cys Gly Cys 225 230 235	718
AGG TAGCATGCGG TCTGGGGAGG GTCTGGCCGC CCAGGACCCT AGCTCAAGAG Arg 240	771
CAGGTGTCAT CAGGCCCCGAG GGACGGCGGA CTATGGCCTC TGCCAGCACA GAGGAGAGCA	831
CACAGTTAAC ACTCACATTT ACACACTCCT TCACTCACGC ACATGTTTAC CGTGGACGGC	891
AGGCGCTAAA AGCCTTGCTT ATTTGCTACC ATTGATACAA ACCTCTGTCC TTTTCGGGAG	951
AGGGAAGGGC ATCTGTGTTT ATGTTGCAGT AATTGGCACT AAATCCAAGT AGAAATGGGT	1011
TAGCATTGGA TTCTCCTTTT AGTTGGAGGC GGTGTGGCTG GATTCTGAC GTTGGATATG	1071
GAGTGCACTG CAGGGCTGGG ATACCCAGAT TCTCTGGAGT GGGCATTGGG AACCTTCAAA	1131

AGTAAGGAGC CACTGGGGCT TGGGAGGGAG CACCCGGTTC CTAAACAAGT CTGATGTGTA 1191
CTGCTCAGTT TG 1203

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 240 amino-acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Lys Phe Cys Leu Val Leu X01 X02 Val Thr Ala Ser Glu Ser X03 X04
1 5 10 15
Leu Ala Leu Arg Arg Leu Gly Phe Gly X05 Pro Gly Gly Gly Asp Gly
20 25 30
Gly Gly Thr Ala X06 Glu Glu Arg Ala Leu Leu Val Ile Ser Ser Arg
35 40 45
Thr Gln Arg Lys Glu Ser Leu Phe Arg Glu Ile Arg Ala Gln Ala Arg
50 55 60
Ala Leu Arg Ala Ala Ala Glu Pro Pro Pro Asp Pro Gly Pro Gly Ala
65 70 75 80
Gly Ser Arg Lys Ala Asn Leu Gly Gly Arg Arg Arg Gln Arg Thr Ala
85 90 95
Leu Ala Gly Thr Arg Gly X07 X08 Gly Ser Gly Gly Gly Gly Gly Gly
100 105 110
Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Ala Gly
115 120 125
Arg Gly His Gly Arg Arg Gly Arg Ser Arg Cys Gly Arg Lys Ser Leu
130 135 140
His Val Asp Phe Lys Glu Leu Gly Trp Asp Asp Trp Ile Ile Ala Pro
145 150 155 160
Leu Asp Tyr Glu Ala Tyr His Cys Glu Gly Val Cys Asp Phe Pro Leu
165 170 175
Arg Ser His Leu Glu Pro Thr Asn His Ala Ile Ile Gln Thr Leu Leu
180 185 190
Asn Ser Met Ala Pro Asp Ala Ala Pro Ala Ser Cys Cys Val Pro Ala
195 200 205
Arg Leu Ser Pro Ile Ser Ile Leu Tyr Ile Asp Ala Ala Asn Asn Val
210 215 220
Val Tyr Lys Gln Tyr Glu Asp Met Val Val Glu Ala Cys Gly Cys Arg
225 230 235 240

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1046 base pairs
- (B) TYPE: nucleic acid

(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:
(B) CLONE: MURINE MV2

(ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 2..790

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

094513E-033101
TCTGG-29TSh66

A	AGA	AAA	CAA	GCT	TGC	ATT	CCT	GCA	GGT	CCG	ACT	CTA	AGA	GGA	TCC	46
	Arg	Lys	Gln	Ala	Cys	Ile	Pro	Ala	Gly	Pro	Thr	Leu	Arg	Gly	Ser	
	1				5					10					15	
TCA	GGG	ACC	CAA	CCC	AGG	CCG	GCT	GGG	AAG	TCT	TTC	GAC	GTG	TGG	CAG	94
Ser	Gly	Thr	Gln	Pro	Arg	Pro	Ala	Gly	Lys	Ser	Phe	Asp	Val	Trp	Gln	
				20					25					30		
GGC	CTG	CGC	CCT	CAG	CCT	TGG	AAG	CAG	CTG	TGC	CTG	GAG	TTG	CGG	GCA	142
Gly	Leu	Arg	Pro	Gln	Pro	Trp	Lys	Gln	Leu	Cys	Leu	Glu	Leu	Arg	Ala	
			35					40					45			
GCC	TGG	GGT	GAG	CTG	GAC	RCC	GGG	GAT	ACG	GGG	GCG	CGC	GCG	AGG	GGT	190
Ala	Trp	Gly	Glu	Leu	Asp	X01	Gly	Asp	Thr	Gly	Ala	Arg	Ala	Arg	Gly	
		50					55					60				
CCC	CAG	CAG	CCA	CCG	CCT	CTG	GAC	CTG	CGG	AGT	CTG	GGC	TTC	GGT	CGG	238
Pro	Gln	Gln	Pro	Pro	Pro	Leu	Asp	Leu	Arg	Ser	Leu	Gly	Phe	Gly	Arg	
		65				70					75					
AGG	GTG	AGA	CCG	CCC	CAG	GAG	CGC	GCC	CTG	CTT	GTA	GTG	TTC	ACC	AGA	286
Arg	Val	Arg	Pro	Pro	Gln	Glu	Arg	Ala	Leu	Leu	Val	Val	Phe	Thr	Arg	
	80				85				90						95	
TCG	CAG	CGC	AAG	AAC	CTG	TTC	ACT	GAG	ATG	CAT	GAG	CAG	CTG	GGC	TCT	334
Ser	Gln	Arg	Lys	Asn	Leu	Phe	Thr	Glu	Met	His	Glu	Gln	Leu	Gly	Ser	
				100					105					110		
GCA	GAG	GCT	GCG	GGA	GCC	GAG	GGG	TCA	TGT	CCA	GCG	CCG	TCG	GGC	TCC	382
Ala	Glu	Ala	Ala	Gly	Ala	Glu	Gly	Ser	Cys	Pro	Ala	Pro	Ser	Gly	Ser	
			115					120					125			
CCA	GAC	ACC	GGG	TCT	TGG	CTG	CCC	TCG	CCC	GGC	CGC	CGG	CGG	CGA	CGC	430
Pro	Asp	Thr	Gly	Ser	Trp	Leu	Pro	Ser	Pro	Gly	Arg	Arg	Arg	Arg	Arg	
		130					135					140				
ACC	GCC	TTC	GCC	AGC	CGT	CAC	GGC	AAG	CGA	CAT	GGC	AAG	AAG	TCC	AGG	478
Thr	Ala	Phe	Ala	Ser	Arg	His	Gly	Lys	Arg	His	Gly	Lys	Lys	Ser	Arg	
	145					150					155					
CTG	CGC	TGC	AGC	AGA	AAG	CCT	CTG	CAC	GTG	AAT	TTT	AAG	GAG	TTA	GGC	526
Leu	Arg	Cys	Ser	Arg	Lys	Pro	Leu	His	Val	Asn	Phe	Lys	Glu	Leu	Gly	
	160				165					170					175	
TGG	GAC	GAC	TGG	ATT	ATC	GCG	CCC	CTA	GAG	TAC	GAG	GCC	TAT	CAC	TGC	574
Trp	Asp	Asp	Trp	Ile	Ile	Ala	Pro	Leu	Glu	Tyr	Glu	Ala	Tyr	His	Cys	
				180					185					190		

GAG GGC GTG TGC GAC TTT CCG CTG CGC TCG CAC CTT GAG CCC ACT AAC	622
Glu Gly Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn	
195 200 205	
CAT GCC ATC ATT CAG ACG CTG ATG AAC TCC ATG GAC CCG GGC TCC ACC	670
His Ala Ile Ile Gln Thr Leu Met Asn Ser Met Asp Pro Gly Ser Thr	
210 215 220	
CCG CCT AGC TGC TGC GTT CCC ACC AAA CTG ACT CCC ATT AGC ATC CTG	718
Pro Pro Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu	
225 230 235	
TAC ATC GAC GCG GGC AAT AAT GTN GTC TAC AAG CAG TAT GAG GAC ATG	766
Tyr Ile Asp Ala Gly Asn Asn X02 Val Tyr Lys Gln Tyr Glu Asp Met	
240 245 250 255	
GTG GTG GAG TCC TGC GGC TGT AGG TAGCGGTGCT GTCCCGCCAC CTGGGCCAGG	820
Val Val Glu Ser Cys Gly Cys Arg	
260	
GACCATGGAG GGAGGCCTGA CTGCCGAGAA AGGAGCAGGA GCTGGCCTTG GAAGAGGCCA	880
CAGGTGGGGG ACAGCCTGAA AGTAGGAGCA CAGTAAGAAG CAGCCCAGCC TTCCCAGAAC	940
CTTCCAATCC CCCAACCAG AAGCAGCTAA GGGGTTTCAC AACTTTTGGC CTTGCCAGCC	1000
TGAAAAGACT AGACAAGAGG GATTCTTCTC TTTTATTAT GGCTTG	1046

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 263 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Arg	Lys	Gln	Ala	Cys	Ile	Pro	Ala	Gly	Pro	Thr	Leu	Arg	Gly	Ser	Ser
1				5				10						15	
Gly	Thr	Gln	Pro	Arg	Pro	Ala	Gly	Lys	Ser	Phe	Asp	Val	Trp	Gln	Gly
			20					25					30		
Leu	Arg	Pro	Gln	Pro	Trp	Lys	Gln	Leu	Cys	Leu	Glu	Leu	Arg	Ala	Ala
		35				40					45				
Trp	Gly	Glu	Leu	Asp	X01	Gly	Asp	Thr	Gly	Ala	Arg	Ala	Arg	Gly	Pro
	50					55					60				
Gln	Gln	Pro	Pro	Pro	Leu	Asp	Leu	Arg	Ser	Leu	Gly	Phe	Gly	Arg	Arg
65					70				75					80	
Val	Arg	Pro	Pro	Gln	Glu	Arg	Ala	Leu	Leu	Val	Val	Phe	Thr	Arg	Ser
				85				90						95	
Gln	Arg	Lys	Asn	Leu	Phe	Thr	Glu	Met	His	Glu	Gln	Leu	Gly	Ser	Ala
			100					105					110		
Glu	Ala	Ala	Gly	Ala	Glu	Gly	Ser	Cys	Pro	Ala	Pro	Ser	Gly	Ser	Pro
		115				120						125			
Asp	Thr	Gly	Ser	Trp	Leu	Pro	Ser	Pro	Gly	Arg	Arg	Arg	Arg	Arg	Thr
130						135					140				

Ala Phe Ala Ser Arg His Gly Lys Arg His Gly Lys Lys Ser Arg Leu
 145 150 155 160
 Arg Cys Ser Arg Lys Pro Leu His Val Asn Phe Lys Glu Leu Gly Trp
 165 170 175
 Asp Asp Trp Ile Ile Ala Pro Leu Glu Tyr Glu Ala Tyr His Cys Glu
 180 185 190
 Gly Val Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr Asn His
 195 200 205
 Ala Ile Ile Gln Thr Leu Met Asn Ser Met Asp Pro Gly Ser Thr Pro
 210 215 220
 Pro Ser Cys Cys Val Pro Thr Lys Leu Thr Pro Ile Ser Ile Leu Tyr
 225 230 235 240
 Ile Asp Ala Gly Asn Asn X02 Val Tyr Lys Gln Tyr Glu Asp Met Val
 245 250 255
 Val Glu Ser Cys Gly Cys Arg
 260

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1345 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(iv) ANTI-SENSE: NO

(vii) IMMEDIATE SOURCE:

- (B) CLONE: HUMAN V1-1

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 138..1301

(ix) FEATURE:

- (A) NAME/KEY: mat_peptide
- (B) LOCATION: 990..1301

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

AACTATAGCA CCTGCAGTCC CTGGTCTTGG GTGTAGGGGT GCGCTCCTGG TCCCGCGGCT	60
CAGGGATATG CAGTGACCAA TGGGTTGTTG GCCTGATGGG ACTTTTGGCT TGCTAAACCA	120
ARGCTCGGTT CGGATAG CCC GGG CGA AGA CGT CCG CTG CTC TGG GCC AGG	170
Pro Gly Arg Arg Arg Pro Leu Leu Trp Ala Arg	
-284 -280 -275	
CTG GCA GCG TTC AGG CTG GGG CAG AGA CGC GGA GTC GGG CGC TGG CTC	218
Leu Ala Ala Phe Arg Leu Gly Gln Arg Arg Gly Val Gly Arg Trp Leu	
-270 -265 -260	

09045450
T0T00-20T5450

CAA CAG GCC TGG CTC CCA CAT CGA AGA CAG CTG GGC CAT TTG CTG TTA Gln Gln Ala Trp Leu Pro His Arg Arg Gln Leu Gly His Leu Leu Leu -255 -250 -245	266
GGA GGC CCC GCG CTG ACA GTG TGC AGG ATT TGC TCT TAC ACA GCT CTT Gly Gly Pro Ala Leu Thr Val Cys Arg Ile Cys Ser Tyr Thr Ala Leu -240 -235 -230	314
TCT CTC TGT CCC TGC CGG TCC CCC GCA GAC GAA TCG GCA GCC GAA ACA Ser Leu Cys Pro Cys Arg Ser Pro Ala Asp Glu Ser Ala Ala Glu Thr -225 -220 -215 -210	362
GGC CAG AGC TTC CTG TTC GAC GTG TCC AGC CTT AAC GAC GCA GAC GAG Gly Gln Ser Phe Leu Phe Asp Val Ser Ser Leu Asn Asp Ala Asp Glu -205 -200 -195	410
GTG GTG GGT GCC GAG CTG CGC GTG CTG CGC CGG GGA TCT CCA GAG TCG Val Val Gly Ala Glu Leu Arg Val Leu Arg Arg Gly Ser Pro Glu Ser -190 -185 -180	458
GGC CCA GGC AGC TGG ACT TCT CCG CCG TTG CTG CTG CTG TCC ACG TGC Gly Pro Gly Ser Trp Thr Ser Pro Pro Leu Leu Leu Leu Ser Thr Cys -175 -170 -165	506
CCG GGC GCC GCC CGA GCG CCA CGC CTG CTG TAC TCG CGG GCA GCT GAG Pro Gly Ala Ala Arg Ala Pro Arg Leu Leu Tyr Ser Arg Ala Ala Glu -160 -155 -150	554
CCC CTA GTC GGT CAG CGC TGG GAG GCG TTC GAC GTG GCG GAC GCC ATG Pro Leu Val Gly Gln Arg Trp Glu Ala Phe Asp Val Ala Asp Ala Met -145 -140 -135 -130	602
AGG CGC CAC CGT CGT GAA CCG CGC CCC CCC CGC GCG TTC TGC CTC TTG Arg Arg His Arg Arg Glu Pro Arg Pro Pro Arg Ala Phe Cys Leu Leu -125 -120 -115	650
CTG CGC GCA GTG GCA GGC CCG GTG CCG AGC CCG TTG GCA CTG CGG CGA Leu Arg Ala Val Ala Gly Pro Val Pro Ser Pro Leu Ala Leu Arg Arg -110 -105 -100	698
CTG GGC TTC GGC TGG CCG GGC GGA GGG GGC TCT GCG GCA GAG GAG CGC Leu Gly Phe Gly Trp Pro Gly Gly Gly Gly Ser Ala Ala Glu Glu Arg -95 -90 -85	746
GCG GTG CTA GTC GTC TCC TCC CGC ACG CAG AGG AAA GAG AGC TTA TTC Ala Val Leu Val Val Ser Ser Arg Thr Gln Arg Lys Glu Ser Leu Phe -80 -75 -70	794
CGG GAG ATC CGC GCC CAG GCC CGC GCG CTC GGG GCC GCT CTG GCC TCA Arg Glu Ile Arg Ala Gln Ala Arg Ala Leu Gly Ala Ala Leu Ala Ser -65 -60 -55 -50	842
GAG CCG CTG CCC GAC CCA GGA ACC GGC ACC GCG TCG CCA AGG GCA GTC Glu Pro Leu Pro Asp Pro Gly Thr Gly Thr Ala Ser Pro Arg Ala Val -45 -40 -35	890
ATT GGC GGC CGC AGA CGG AGG AGG ACG GCG TTG GCC GGG ACG CGG ACA Ile Gly Gly Arg Arg Arg Arg Arg Thr Ala Leu Ala Gly Thr Arg Thr -30 -25 -20	938
GCG CAG GGC AGC GGC GGG GGC GCG GGC CGG GGC CAC GGG CGC AGG GGC Ala Gln Gly Ser Gly Gly Gly Ala Gly Arg Gly His Gly Arg Arg Gly -15 -10 -5	986
CGG AGC CGC TGC AGC CGC AAG CCG TTG CAC GTG GAC TTC AAG GAG CTC Arg Ser Arg Cys Ser Arg Lys Pro Leu His Val Asp Phe Lys Glu Leu 5 10 15	1034

GGC TGG GAC GAC TGG ATC ATC GCG CCG CTG GAC TAC GAG GCG TAC CAC	1082
Gly Trp Asp Asp Trp Ile Ile Ala Pro Leu Asp Tyr Glu Ala Tyr His	
20 25 30	
TGC GAG GGC CTT TGC GAC TTC CCT TTG CGT TCG CAC CTC GAG CCC ACC	1130
Cys Glu Gly Leu Cys Asp Phe Pro Leu Arg Ser His Leu Glu Pro Thr	
35 40 45	
AAC CAT GCC ATC ATT CAG ACG CTG CTC AAC TCC ATG GCA CCA GAC GCG	1178
Asn His Ala Ile Ile Gln Thr Leu Leu Asn Ser Met Ala Pro Asp Ala	
50 55 60	
GCG CCG GCC TCC TGC TGT GTG CCA GCG CGC CTC AGC CCC ATC AGC ATC	1226
Ala Pro Ala Ser Cys Cys Val Pro Ala Arg Leu Ser Pro Ile Ser Ile	
65 70 75	
CTC TAC ATC GAC GCC GCC AAC AAC GTT GTC TAC AAG CAA TAC GAG GAC	1274
Leu Tyr Ile Asp Ala Ala Asn Asn Val Val Tyr Lys Gln Tyr Glu Asp	
80 85 90 95	
ATG GTG GTG GAG GCC TGC GGC TGC AGG TAGCGCGCGG GCCGGGGAGG	1321
Met Val Val Glu Ala Cys Gly Cys Arg	
100	
GGGCAGCCAC GCGGCCGAGG ATCC	1345

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 388 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Pro Gly Arg Arg Arg Pro Leu Leu Trp Ala Arg Leu Ala Ala Phe Arg	
-284 -280 -275 -270	
Leu Gly Gln Arg Arg Gly Val Gly Arg Trp Leu Gln Gln Ala Trp Leu	
-265 -260 -255	
Pro His Arg Arg Gln Leu Gly His Leu Leu Leu Gly Gly Pro Ala Leu	
-250 -245 -240	
Thr Val Cys Arg Ile Cys Ser Tyr Thr Ala Leu Ser Leu Cys Pro Cys	
-235 -230 -225	
Arg Ser Pro Ala Asp Glu Ser Ala Ala Glu Thr Gly Gln Ser Phe Leu	
-220 -215 -210 -205	
Phe Asp Val Ser Ser Leu Asn Asp Ala Asp Glu Val Val Gly Ala Glu	
-200 -195 -190	
Leu Arg Val Leu Arg Arg Gly Ser Pro Glu Ser Gly Pro Gly Ser Trp	
-185 -180 -175	
Thr Ser Pro Pro Leu Leu Leu Leu Ser Thr Cys Pro Gly Ala Ala Arg	
-170 -165 -160	
Ala Pro Arg Leu Leu Tyr Ser Arg Ala Ala Glu Pro Leu Val Gly Gln	
-155 -150 -145	
Arg Trp Glu Ala Phe Asp Val Ala Asp Ala Met Arg Arg His Arg Arg	
-140 -135 -130 -125	

[illegible]